

EXHIBIT G

IEEE Std 100-1996

The IEEE Standard Dictionary of Electrical and Electronics Terms

Sixth Edition

**Standards Coordinating Committee 10, Terms and Definitions
Jane Radatz, Chair**

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environmental conditions

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equalization

deviations from linearity exist within the environmental range over which the amplifier is expected to operate, particularly if the amplification, for example, is not a monotonic function of the environmental quantity, the existence of such deviations should be noted. (MAG) 107-1964w

environmental conditions (electric penetration assemblies) Physical service conditions external to the electric penetration assembly such as ambient temperature, pressure, radiation, humidity, vibration, chemical or demineralized water spray and submergence expected as a result of normal operating requirements, and postulated conditions appropriate for the design basis events applicable to the electric penetration assembly. (PE) 317-1983r

environmental dispatch control An automatic generation control subsystem that allocates unit generation levels within a control area based upon environmental considerations. (PE) 94-1991

environmental impact A change in existing conditions due to a natural or artificial cause, whether beneficial or adverse, that affects an organism and its surroundings. (PE/T&D) 539-1990

environmental loss time The part of down-time that is due to a fault in the computer environment. *Synonym:* external loss time. (C) 610.10-1994

environmental offset (magnetic amplifier) The change in quiescent operating point due to a specified change in one environmental quantity (such as line voltage) while all other environmental quantities are held constant. (MAG) 107-1964w

environmental radio noise (control of system electromagnetic compatibility) The total electromagnetic disturbance complex in which an equipment, subsystem, or system may be immersed, exclusive of its own electromagnetic contribution. (EMC) C63.12-1987

environmental seal (Class 1E connection assemblies) A device or system that restricts the passage of a gas or liquid through a boundary in conjunction with related cables or wires as an assembly. This does not include fire stops, in-line splices, or containment electric penetrations. (PE) 572-1985r

environmental simulation (modeling and simulation) A simulation that depicts all or part of the natural or man-made environment of a system; for example, a simulation of the radar equipment and other tracking devices that provide input to an aircraft tracking system. (C) 610.3-1989

environmental temperature (separable insulated connectors) The temperature of the surrounding medium, such as air, water, and earth, into which the heat of the connector is dissipated directly, including the effect of heat dissipation from associated cables and apparatus. (PE/T&D) 386-1995

environmental trip-point stability (magnetic amplifier) The change in the magnitude of the trip point (either trip OFF or trip ON, as specified) control signal due to a specified change in one environmental quantity (such as line voltage) while all other environmental quantities are held constant. (MAG) 107-1964w

environment task The anonymous task whose execution elaborates the library items of the declarative part of an active partition, and then calls the main subprogram, if there is one. (C/PA) 1003.5b-1995

environs (radiological monitoring instrumentation) The uncontrolled area at or near the site boundary. (NI) N320-1970r

EOF *See:* end of file; end-of-file label.

EOL-3 *See:* Expression-Oriented Language 3.

EOT *See:* end-of-tape marker.

EOV *See:* end-of-volume label.

EPC-40 Electrical plastic conduit for type II applications, fabricated from PE; or for type II and III applications, fabricated from PVC. (PE/SUB) 525-1992

EPC-80 Electrical plastic conduit for type IV applications, fabricated from PVC. (PE/SUB) 525-1992

EPD *See:* echo path delay.

ephapse The electric junction of two parallel or crossing nerve fibers at which there may occur phenomena similar to those occurring at a synapse. (EMB) 471

ephemeris (communication satellite) The position vector of a satellite or spacecraft in space with respect to time. (COM) 119

epidemiology The study of the frequency and distribution of a disease, or a physiological condition in human populations, and of the factors that influence its frequency and distribution. (PE/T&D) 539-1990

epilog breakpoint A breakpoint that is initiated upon exit from a given program or routine. *Synonym:* postamble breakpoint. *Contrast:* prolog breakpoint. *See also:* code breakpoint; data breakpoint; dynamic breakpoint; programmable breakpoint; static breakpoint. (C) 610.12-1990

EPL *See:* echo path loss.

E-plane bend (waveguide components) A waveguide bend (corner) in which the longitudinal axis of the guide remains in a plane parallel to the electric field vector throughout the bend (corner). (MTT) 147-1979w

E-plane line A rectangular waveguide containing one or more planar conducting structures, with or without dielectric backings, which are oriented in the plane defined by the electric field and the direction of propagation of the dominant waveguide mode. The guiding structures consist of one or more thin conducting strips, each having one edge extending to the broad wall of the enclosure. (MTT) 1004-1987w

E-plane, principal (1) (linearly polarized antenna) The plane containing the electric field vector and the direction of maximum radiation. *See also:* antenna; radiation. (AP) 351
(2) For a linearly polarized antenna, the plane containing the electric field vector and the direction of maximum radiation. (AP) 145-1993

E-plane tee junction (series tee) (waveguide components) A waveguide tee junction in which the electric field vector of the dominant mode in each arm is parallel to the plane of the longitudinal axes of the guides. (MTT) 147-1979w

Epoch The time 0 hours, 0 minutes, 0 seconds, January 1, 1970, Coordinated Universal Time. *See also:* seconds since the Epoch. (C/PA) 9945-1-1996, 9945-2-1993

epoch A base reference time defined as 0 hours, 0 minutes, 0.0 seconds, 1 January 1970, Universal Coordinated Time. (C/PA) 1003.5b-1995

EPROM *See:* erasable programmable read-only memory.

EPT Electrical plastic tubing for type I applications, fabricated from PVC. (PE/SUB) 525-1992

equal-energy source (light) (television) A light source from which the emitted power per unit of wavelength is constant throughout the visible spectrum. (BT) 201-1979w

equal interval (isophase) light (illuminating engineering) A rhythmic light in which the light and dark periods are equal. (EEC/IE) 11261

equal interval quantizing A quantization technique in which the range of gray levels in an image is divided into intervals of equal length and the quantization level assigned to each pixel is the same for all pixels whose original gray levels fall within the same interval. *Synonym:* linear quantizing. (C) 610.4-1990

equality *See:* equivalence.

equalization (1) (transmission performance of telephone sets) The function a telephone set performs when it automat-

equivalent periodic line

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erection cut-out

where

- $\bar{\mu}$ = complex relative permeability
 μ_r = real complement of $\bar{\mu}$, parallel representation
 μ_i = imaginary component of $\bar{\mu}$, parallel representation
 L_0 = self-inductance of coil with a core of unit relative permeability, but with the same flux distribution as with a ferromagnetic core
 L_p = parallel equivalent self-inductance of the coil with a core of μ permeability
 R_p = parallel equivalent loss resistance of the core
 ω = angular frequency in radians/sec.

(MAG) 393-1977s

equivalent periodic line (uniform line) A periodic line having the same electrical behavior, at a given frequency, as the uniform line when measured at its terminals or at corresponding section junctions. *See also:* transmission line.

(Std100) 270-1966w

equivalent radiated power *See:* effective radiated power.

equivalent salt-deposit density A measure of contamination level. (PE/T&D) 957-1995

equivalent series circuit elements (magnetic core testing) Under stated conditions of excitation and coil configuration, values of a reactance and a resistance connected in series so that they give representation to the real permeability of the core (μ_r) and to the total losses in the core (μ_i).

$$L_s = \mu_r' L_0$$

$$R_s = \omega \mu_i' L_0$$

$$Z = R_s + j\omega L_s = j\omega \bar{\mu} L_0$$

where

L_s = self-inductance of coil with a core of $\bar{\mu}$ permeability; series equivalent inductance

ω = angular frequency in radians/sec.

(MAG) 393-1977s

equivalent series (parallel) noise resistance referred to the input of an amplifier In a hypothetically noise-free amplifier, the value of resistor that, when connected in series with (shunted across) its input, will produce the same output noise spectrum as is observed in the real amplifier. The gain and bandwidth of the real and hypothetical amplifiers must be the same for this definition to be valid. (NPS) 325-1996

equivalent source reflection coefficient (network analyzers) The reflection coefficient equal to that caused by the source impedance Z_s .

$$\Gamma_s = \frac{Z_s - Z_0}{Z_s + Z_0}$$

where the source impedance Z_s is the Thevenin impedance and is only considered in the linear range of the source. The Thevenin impedance is the impedance in Thevenin's Theorem. The impedance, Z_0 , is the characteristic impedance of the transmission system. *Notes:* 1. In order to approximate a Z_0 source impedance, that is, $\Gamma_s = 0$, a directional coupler or suitable power splitter can be used as part of a feedback control circuit to maintain a constant incident power at its main-arm output port independent of the source impedance of the radio-frequency source connected to the main-arm input port of the coupler. 2. At lower frequencies, in order to approximate a Z_0 source impedance, a Z_0 impedance can be put in series with a constant voltage source that is maintained at zero impedance by means of a feedback control circuit independent of the source impedance of the radio-frequency source.

(IM) 378-1986w

equivalent sources *See:* Huygens' sources.

equivalent sphere illumination (1) (electric power systems in commercial buildings) The measure of the effectiveness with which a practical lighting system renders a task visible compared with the visibility of the same task that is lit inside a sphere of uniform luminance. (IA) 241-1990

(2) (illuminating engineering) The level of sphere illumination that would produce task visibility equivalent to that

produced by a specific lighting environment.

(EEC/IE) [126]

equivalent test alternating voltage (charging inductors) A sinusoidal root-mean-square test voltage equal to 0.707 times the power-supply voltage of the network-charging circuit and having a frequency equal to the resonance frequency of charging. *Note:* This is the alternating component of the voltage that appears across the charging inductor in a resonance-charging circuit of the pulse forming network.

(MAG) 306-1969w

equivalent two-winding kVA rating (power and distribution transformers) The equivalent two-winding rating of multi-one-half the sum of the kVA ratings of all windings. *Note:* It is customary to base this equivalent two-winding kVA rating on the self-cooled rating of the transformer.

(PE) CS7.12.80-1978r

equivocation The conditional information content of an input symbol given an output symbol, averaged over all input-output pairs. *See also:* information theory. (IT) [123]

erasable programmable read-only memory (EPROM) (1) Same as EAROM, except erasure is implemented by exposure to ultraviolet light. *See also:* electrically alterable read-only memory. (ED) 641-1987w

(2) A type of programmable read-only memory that can be erased and reprogrammed using ultraviolet light. *Synonym:* reprogrammable read-only memory. *See also:* PROM programmer. (C) 610.10-1994

erasable read-only-memory *See:* erasable programmable read-only memory.

erasable storage A type of storage whose contents can be erased or modified. *Note:* This is generally applied only to nonvolatile storage. *Contrast:* permanent storage.

(C) 610.10-1994

erase (1) (charge-storage tubes) To reduce by a controlled operation the amount of stored information. *See also:* storage tube. (ED) 158-1962w, 161-1971w

(2) (computer graphics) To remove one or more display elements from the screen of a cathode ray tube.

(C) 610.6-1991

erase character* *See:* delete character.

* Deprecated.

erase head Any magnetic head used to erase information from magnetic storage media. (C) 610.10-1994

erasing head A device for obliterating any previous magnetic recordings. *See also:* alternating-current erasing head; direct-current erasing head; permanent-magnet erasing head; phonograph pickup. (SP) [32]

erasing rate (charge-storage tubes) The time rate of erasing a storage element line or area, from one specified level to another. *Note:* the distinction between this and erasing speed. *See also:* storage tube. (ED) 158-1962w

erasing, selective (storage tubes) Erasing of selected storage elements without disturbing the information stored on other storage elements. *See also:* storage tube.

(ED) 158-1962w

erasing speed (charge-storage tubes) The linear scanning rate of the beam across the storage surface in erasing. *Note:* the distinction between this and erasing rate. *See also:* storage tube. (ED) 158-1962w, 161-1971w

erasing time, minimum usable (storage tubes) The time required to erase stored information from one specified level to another under stated conditions of operation and without re-writing. *Note:* The qualifying adjectives minimum usable are frequently omitted in general usage when it is clear that the minimum usable erasing time is implied. *See also:* storage tube. (ED) 158-1962w

E-R diagram *See:* entity-relationship diagram.

erection (gyros) The process of aligning, by precession, a reference axis with respect to the vertical. (AE) 528-1994

erection cut-out (gyros) The feature wherein the signal supplying the erection torque is disconnected in order to minimize vehicle maneuver effects. (AE) 528-1994

read-around number

delete; destructive read; dirty read; retrieve; update.

(C) 610.12-1990, 610.5-1990

(4) To obtain data from a storage device, from a data medium, or another source. *See also*: backward read; delete; destructive read; nondestructive read; read cycle; read/write; scatter read; write. (C) 610.10-1994

read-around number (storage tubes) The number of times reading operations are performed on storage elements adjacent to any given storage element without more than a specified loss of information from that element. *Note*: The sequence of operations (including printing, writing, or erasing), and the storage elements on which the operations are performed, should be specified. *See also*: storage tube. (ED) 158-1962w, 161-1971w

read-around ratio* *See*: read-around number.

* Deprecated.

read-back check *See*: echo check.

read cycle (1) A data transfer bus (DTB) cycle that is used to transfer 1, 2, 3, or 4 bytes from a slave to a master. The cycle begins when the master broadcasts an address and an address modifier. Each slave captures the address and the address modifier, and verifies if it will respond to the cycle. If it is intended to respond, it retrieves the data from its internal storage, places it on the data bus, and acknowledges the transfer. The master then terminates the cycle. (BA/C) 1014-1987

(2) (read) A cycle in which the direction of data flow is from slave(s) toward a master. 960-1993

(3) A cycle in which data are transferred from some storage location to the device that requested the read. *Contrast*: write cycle. (C) 610.10-1994

read cycle time The minimum time interval between the starts of successive read cycles in a storage device that has separate read and write cycles. *Contrast*: write cycle time. (C) 610.10-1994

read data transfer One or more data transfers from a replying agent to a bus owner, with uninterrupted bus ownership. (C/MM) 1296-1987s

read delay trd (metal-nitride-oxide field-effect transistor) Time period between the end of the writing pulse and the start of the read condition. (ED) 581-1978w

read disturb (metal-nitride-oxide field-effect transistor) A change in the instantaneous threshold voltage of a metal-nitride-oxide-semiconductor (MNOS) transistor due to the very act of measuring it. (ED) 581-1978w

read disturb cycles The number of consecutive read cycles that occur before a memory state becomes indistinguishable, due solely to reading. (ED) 641-1987w

reader (A) An input device that is capable of sensing stored information, and of conveying that information into on-line storage. **(B)** Any device which can sense, detect, or convert data from one medium to another. *See also*: badge reader; card reader; character reader; optical mark reader; paper tape reader. (C) 610.10-1994

read head (1) (test, measurement, and diagnostic equipment) A sensor that converts information stored on punched tape, magnetic tape, magnetic drum, and so forth into electrical signals. (MIL) [2]

(2) A head capable only of reading information from the storage medium. *Synonym*: playback head. *Contrast*: read/write head; write head. *See also*: pre-read head. (C) 610.10-1994

readily accessible (packaging machinery) (power and distribution transformers) Capable of being reached quickly for operation, renewal, or inspections, without requiring those to whom ready access is requisite to climb over or remove obstacles or to resort to portable ladders, chairs, etc. (IA/NEC/NESC/PE) [86], 333-1980w, C57.12.80-1978r

readily climbable Having sufficient handholds and footholds to permit an average person to climb easily without using a ladder or other special equipment. (NESC) C2-1997

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read-only memory

readiness test (test, measurement, and diagnostic equipment) A test specifically designed to determine whether an equipment or system is operationally suitable for a mission. (MIL) [2]

reading (1) (recording instrument) The value indicated by the position of the index that moves over the indicating scale. *See also*: accuracy rating. (EEC/PE) [119]

(2) (radiation instrumentation) The indicated value of the readout. (NI) N42.17B-1989r

reading rate (storage tubes) The rate of reading successive storage elements. *See also*: storage tube. (ED) 158-1962w

reading speed (storage tubes) *See also*: data processing; storage tube. (ED) 158-1962w, 161-1971w

reading speed, minimum usable (storage tubes) The slowest scanning rate under stated operating conditions before a specified degree of decay occurs. *Note*: The qualifying adjectives minimum usable are frequently omitted in general usage when it is clear that the minimum usable reading speed is implied. *See also*: storage tube. (ED) 158-1962w

reading time (storage tubes) The time during which stored information is being read. *See also*: storage tube. (ED) 158-1962w

reading time, maximum usable (storage tubes) The length of time a storage element, line, or area can be read before a specified degree of decay occurs. *Notes*: 1. This time may be limited by static decay, dynamic decay, or a combination of the two. 2. It is assumed that rewriting is not done. 3. The qualifying adjectives maximum usable are frequently omitted in general usage when it is clear that the maximum usable reading time is implied. *See also*: storage tube. (ED) 158-1962w

read-in lag (diode-type camera tube) The fraction of the steady-state ON signal that is read out in any field after initiation of irradiance. (ED) 503-1978w

read-modify-write cycle A data transfer bus (DTB) cycle that is used to both read from, and write to, a slave location without permitting any other master to access that location. This cycle is most useful in multiprocessing systems where certain memory locations are used to provide semaphore functions. (BA/C) 1014-1987

read-modify-write (RMW) cycle A cycle in which an item is read, its contents are modified, and then is written back to storage in a single operation. *See also*: read cycle; write cycle. (C) 610.10-1994

read-mostly devices (metal-nitride-oxide field-effect transistor) Metal-nitride-oxide semiconductor (MNOS) memory transistors whose retention under constant read condition is in excess of one year. This makes these devices applicable in electrically-alterable read-only memories (EAROMs). A typical writing pulse width is one ms. (ED) 581-1978w

read number, maximum usable (storage tubes) The number of times a storage element, line, or area can be read without rewriting before a specified degree of decay results. *Note*: The qualifying adjectives maximum usable are frequently omitted in general usage when it is clear that the maximum usable read number is implied. *See also*: storage tube. (ED) [45], 158-1962w

read-only Pertaining to a storage medium which can only be read from. *Contrast*: read/write; write-once/read-many. (C) 610.10-1994

read-only access A type of access to data in which the data may be read but not changed or deleted. *Synonym*: fixed. *Contrast*: read/write access. *See also*: delete access; update access; write access. (C) 610.5-1990

read-only file system (1) A file system that has implementation-defined characteristics restricting modifications. (C/PA) 1003.5-1992, 9945-1-1996, 9945-2-1993

(2) A file system that has implementation defined characteristics restricting modifications. (C/PA) 1003.5b-1995

read-only memory (ROM) (1) The memory on a node that provides storage locations for normally read-only data or

read-only storage

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realized gain, partial

code. The ROM data are maintained across losses of primary and secondary power. In some implementations ROM may be writable, using (normally disabled) vendor-specific protocols. (C/MM) 1596-1992

(2) A form of nonvolatile memory whose contents are generally supplied during manufacture and cannot be altered. (BA/C) 14536-1995

(3) Memory that can only be read from. *Contrast:* read/write memory. *See also:* erasable programmable read-only memory; programmable read-only memory; read-only storage. (C) 610.10-1994

read-only storage A type of storage which can be read, but not modified except by a particular user, or when operating under particular conditions; for example, punched paper tape, or a storage device in which writing is prevented by a lock-out. *Synonym:* nonerasable storage. *See also:* control read-only memory; fixed storage; fixed-program read-only storage; protected storage. (C) 610.10-1994

readout (1) (radiation instrumentation) The device that conveys visual information regarding the measurement to the user. (NI) N317-1980r, N320-1979r, N323-1978r, N42.17B-1989r

(2) (A) (test, measurement, and diagnostic equipment) The device used to present output information to the operator, either in real time or as an output of a storage medium. (B) (test, measurement, and diagnostic equipment) The act of reading, transmitting, displaying information either in real time or from an internal storage medium of an operator or an external storage medium or peripheral equipment. (MIL) [2]

readout, command (numerically controlled machines) Display of absolute position as derived from position command. *Note:* In many systems the readout information may be taken directly from the dimension command storage. In others it may result from the summation of command departures. (IA) [61]

readout device *See:* character display device.

read-out tag (diode-type camera tube) The fraction of the initial signal which is read out in any field after the image illumination is interrupted. (ED) 503-1978w

readout, position (numerically controlled machines) Display of absolute position as derived from a position transducer. (IA) [61]

read path In a reader, a path that has a read station. (C) 610.10-1994

read pulse A pulse that causes information to be acquired from a magnetic cell or cells. *See also:* ONE state. (Std100) 163-1959w

read ready violation A word-serial protocol error that occurs when data is read from a servant while its read ready bit is zero (0). (C/MM) 1155-1992

read station The location in a reader where the data on a medium are read. *Synonym:* sensing station. (C) 610.10-1994

read transaction A transaction that passes an address and size parameter from the requester to the responder and returns data values from the responder to the requester. The size parameter specifies the number of bytes that are transferred. (C/MM) 1212-1991s

read/write Pertaining to an operation, process, or object that is involved in both reading and writing. For example, a read/write head is a head that can perform both read and write operations. *Contrast:* read-only; write-once/read-many. *See also:* read; write. (C) 610.10-1994

read/write access A type of access to data in which the data may be both retrieved, changed, and stored. *Contrast:* read-only access. *See also:* delete access; update access; write access. (C) 610.5-1990

read/write cycle A cycle in which one read operation and one write (or rewrite) operation are performed. (C) 610.10-1994

read/write head A head capable of both reading from or writing on the medium. *Synonyms:* combined head; record head. *Contrast:* read head; write head. (C) 610.10-1994

read/write memory (RWM) Memory into which information may be stored (or written) and from which information may be retrieved (or read) for example, digital tape recorders and random-access memory. *Contrast:* read-only memory. (C) 610.10-1994

read/write opening *See:* read/write slot.

read/write slot An opening in the jacket of a floppy disk allowing access to the storage medium by the read/write heads. *Synonym:* read/write opening. (C) 610.10-1994

ready light An indicator light on a system or system component that indicates that the system is on and ready for operation. (C) 610.10-1994

ready task A task that is not blocked. The ready tasks include those that are running as well as those that are waiting for a processor. *Note:* For consistency, this standard uses the definition of "ready" from Ada RM, which includes running tasks among those that are ready. Thus the meaning of "ready" is close to the meaning of "runnable" as used in POSIX.1c, but the two terms differ in that "ready" includes running threads. This difference in terminology requires differences in several descriptions between this Ada binding and the base POSIX standards, to preserve compatible semantics. (C/PA) 1003.5b-1995

ready-to-receive signal (facsimile) A signal sent back to the facsimile transmitter indicating that a facsimile receiver is ready to accept the transmission. *See also:* facsimile signal. (COM) 168-1956w

reagent blank A volume of demineralized water for liquid samples carried through the entire analytical procedure. The volume or weight of the blank shall be approximately equal to the volume or weight of the sample processed. (NI) N42.23-1995

real address (1) The address of a storage location in the main storage part of a virtual storage system. *Contrast:* virtual address. (C) 610.12-1990

(2) The address of a storage location in real storage. *See also:* address translator. (C) 610.10-1994

real data Data used to represent real numbers. *See also:* binary coded decimal real data; floating-point real data. (C) 610.5-1990

real estate *See:* footprint.

real fixed binary data *See:* fixed-point binary data.

real fixed decimal data *See:* fixed-point real data.

real float binary data *See:* floating-point data.

real float decimal data *See:* floating-point data.

real group ID (1) The attribute of a process that, at the time of process creation, identifies the group of the user who created the process. This value is subject to change during the process lifetime. *See also:* group ID. (C/PA) 1003.5-1992, 9945-1-1996, 9945-2-1993

(2) The attribute of a process that, at the time of process creation, identifies the group of the user who created the process. This value is subject to change during the process lifetime. *See also:* group ID. (C/PA) 1003.5b-1995

realizable function (linear passive networks) A response function that can be realized by a network containing only positive resistance, inductance, capacitance, and ideal transformers. *Note:* This is the sense of realizability in the theory of linear, passive, reciprocal, time-invariant networks. (CAS) 156-1960r

realized gain The gain of an antenna reduced by the losses due to the mismatch of the antenna input impedance to a specified impedance. *Note:* The realized gain does not include losses due to polarization mismatch between two antennas in a complete system. (AP) 145-1993

realized gain, partial (of an antenna for a given polarization) The partial gain of an antenna for a given polarization reduced by the loss due to the mismatch of the antenna input impedance to a specified impedance. (AP) 145-1993

rod storage

old for cones. At these levels there is no basis for perceiving differences in hue and saturation. No rods are found in the center of the fovea. (EEC/IE) [126]

rod storage A type of storage consisting of wires, coated with a nickel-iron alloy, which are cut in such a way as to form stacks of rods. (C) 610.10-1994

Roebel transposition (rotating machinery) An arrangement of strands occupying two heightwise tiers in a bar (half coil), wherein at regular intervals through the core length, one top strand and one bottom strand cross over to the other tier in such a way that each strand occupies every vertical position in each tier so as to equalize the voltage induced in each of the strands, thereby eliminating current that would otherwise circulate among the strands. Looking from one end of the slot, the strands are seen to progress in a clockwise direction through the core length through what may be interpreted as an angle of 360 degrees so that the strands occupy the same position at both ends of the core. There are several variations of the Roebel transposition in use. In a bar having four tiers of copper, the two pairs of tiers would each have a Roebel transposition. The uninsulated bar, then, would be assembled as two Roebel-transposed bars, side-by-side. In order to trans-pose against voltages induced by end-winding flux, various modifications of the transposition in the slot, and extension of the Roebel transposition into the end winding have been used. *See also:* rotor; stator. (PE) [9]

roff A text-formatting language. (C) 610.13-1993

rogue module An unauthorized module introduced into the system to perform malicious activities, or an authorized module corrupted by malicious hardware or software. (BA/C) 896.3-1993

role The context in which an operation is executed. The utilities in this standard require the ability to perform operations on more than one system, perhaps by more than one person. These operations are separated into distinct roles including developer, packager, manager, source, target, and client. (C/PA) 1387.2-1995

roll angle *See:* roll attitude.

roll attitude (navigation aid terms) The angle between the horizontal and the lateral axis of the craft. *Synonym:* roll angle. *See also:* bank. (AE) 172-1983w

roll back (1) (telecommunications) The procedure by which a central processing unit recovers automatically from a fault that has led to a system malfunction. The complexity of the procedure, and the resulting temporary effect on the service of the system, depend on the nature of the fault. The procedure will usually involve the process of reinitialization. The time required to accomplish roll back is a measure of switching system performance. (COM) 973-1990w

(2) (data management) Backward recovery of a database in which recently applied changes to the current version of a database are reversed. *Note:* A journal or checkpoint file is used to determine which changes must be reversed. *Synonym:* back out. *Contrast:* rollforward. (C) 610.5-1990

roller *See:* sheave.

roller bearing (rotating machinery) A bearing incorporating a peripheral assembly of rollers. *See also:* bearing. (PE) [9]

roller, hold-down *See:* block, hold-down.

roller, uplift *See:* uplift roller.

rollforward Forward recovery of a database in which all or part of a database is restored using data from a backup or snapshot of the database. Changes since the backup are reapplied to the database to restore it to some recently existing state. *Contrast:* roll back. (C) 610.5-1990

roll in (1) (software) To transfer data or computer program segments from auxiliary storage to main storage. *Contrast:* roll out. *See also:* swap. (C) 610.12-1990

(2) To restore to main storage the sets of data that were previously rolled out. *Contrast:* roll out. (C) 610.10-1994

rolling contacts A contact arrangement in which one cooperating member rolls on the other. *See also:* contactor. (IA) [60], [84]

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room cavity ratio

rolling interval An interval of time, the beginning of which progresses in steps of sub-intervals and where the interval length is equal to an integral multiple of sub-intervals. (ELM) C12.15-1990

rolling sphere method A simplified technique for applying the electrogeometric theory to the shielding of substations. The technique involves rolling an imaginary sphere of prescribed radius over the surface of a substation. The sphere rolls up and over (and is supported by) lightning masts, shield wires, fences, and other grounded metal objects intended for lightning shielding. A piece of equipment is protected from a direct stroke if it remains below the curved surface of the sphere by virtue of the sphere being elevated by shield wires or other devices. Equipment that touches the sphere or penetrates its surface is not protected. (PE/SUB) 998-1996

rolling transposition A transposition in which the conductors of an open wire circuit are physically rotated in a substantially helical manner. With two wires a complete transposition is usually executed in two consecutive spans. *See also:* open wiring. (EEC/PE) [119]

roll-in-jewel error Error caused by the pivot rolling up the side of the jewel and then falling to a lower position when tapped. This effect is not present when instruments are mounted with the axis of the moving element in a vertical position. (Roll-in-jewel error includes pivot-friction error that is small compared to the roll-in-jewel error.) (EEC) [102]

rolloff (rounding after first transition), A_{RO} (pulse transformers) The amount by which the instantaneous pulse value is less than A_M at the point in time of the intersection of straight-line segments used to determine A_M . It is expressed in amplitude units or as a percentage of A_M . (PEL) 390-1987r

roll out To transfer sets of data, such as files or computer programs of various sizes, from main storage to auxiliary storage for the purpose of freeing main storage for another use. *Contrast:* roll in. *See also:* swap. (C) 610.10-1994, 610.12-1990

roll-out A movement process by which a snaphook or carabiner unintentionally disengages from another connector or object to which it is coupled. (PE/T&D) 1307-1996

roll over angle (conductor stringing equipment) For tangent stringing, the sum of the vertical angles between the conductor and the horizontal on both sides of the traveler. Resultants of these angles must be considered when stringing through line angles. Under some stringing conditions, such as stringing large diameter conductor, excessive roll over angles can cause premature failure of a conductor splice if it is allowed to pass over the travelers. (PE/T&D) 524-1980s

ROM (1) An abbreviation for read-only memory. The ROM data is maintained through losses of power. In some implementations ROM may actually be writeable, using (normally disabled) vendor-dependent protocols. (C/MM) 1212-1991s

(2) Read-only memory. (BA/C) 14536-1995

(3) *See also:* read-only memory. (C) 610.10-1994

roof bushing A bushing intended primarily to carry a circuit through the roof, or other grounded barriers of a building, in a substantially vertical position. Both ends must be suitable for operating in air. At least one end must be suitable for outdoor operation. *See also:* bushing. 49-1948w

roof conductor The portion of the conductor above the eaves running along the ridge, parapet, or other portion of the roof. (EEC/PE) [119]

room air velocity *See:* velocity, room air.

room ambient temperature (electrical insulation tests) $20^{\circ}\text{C} \pm 5^{\circ}(68^{\circ}\text{F} \pm 9^{\circ})$. (AE) 135-1969w

room bonding point (health care facilities) A grounding terminal or group of terminals which serves as a collection point for grounding exposed metal or conductive building surfaces in a room. (NEC/NESC) [86]

room cavity ratio (illuminating engineering) For a cavity formed by a plane of the luminaires, the work-plane, and the